

# Forests and Fleets

**Russell Meiggs**

In 1926 a Harvard historian, R. G. Albion, published a volume on the British navy. Under the title *Forests and sea power* he examined not the strategy, tactics, and leadership that lay behind the development of British naval supremacy, but the spreading oaks of southern England, the white pine of Maine and New Hampshire, and the prosaic record of timber stocks in the royal dockyards. He did not strain his evidence to extract sensational conclusions: Nelson and not the timber merchants remained primarily responsible for the victory of Trafalgar. But his study illuminated certain phases of British naval history. He showed, for instance, that one of the main reasons for the failure of the British fleets in the War of American Independence was the weakness of the masts, which resulted from a failure to anticipate the cutting-off of the supplies of white pine from New England on which the navy had come to rely. The difficulties caused by the French Continental blockade in the Napoleonic War were accentuated by a short-sighted timber-purchasing policy which had failed to build up adequate stocks of the right timber for essential repairs. British foreign policy in the Baltic was largely dictated by the urgent need to control or at least have access to the large conifer forests of Sweden, Finland, and Russia and the oak that came down the rivers from central Europe to the Polish ports. The decisive part played by the British navy in world history abundantly justified the study: it is only surprising that such an approach had not been seriously attempted before.

## **The fruits of naval power**

To translate the theme to the ancient world needs perhaps more justification. In reviewing the decisive phases of ancient history we think more of the land than of the sea. The rivalries between Egypt and the kingdoms of Mesopotamia were fought out by the armies; the Persian empire was won by land and remained land-centred; the Roman empire was built up and maintained by the legions. But in the Mediterranean world the influence of sea power was rarely dormant and sometimes decisive. When the historian Thucydides was growing up, the focal point of the Greek-speaking world was the Athenian empire, which had changed a small city-state with only moderate natural resources into the richest and most powerful community in the Mediterranean. That empire was the fruit of naval power and when Thucydides prefaced his account of the great war between Athens and the Peloponnesian League (431-405 B.C.) with a compressed review of early Greek history, his main accent was on the growth of navies. He realised that the wealth and magnificence of Periclean Athens had been won by the Athenian triremes and he was practical enough to know that naval power depended on access to good shipbuilding timber. When the great armada which had sailed out of the Piraeus with such high hopes was destroyed at Syracuse in 413, Thucydides understood that it was not only a question of finding new crews but also of getting new supplies of ship-timber when Athens no longer had the power to impress potential suppliers. Fleets depended on forests, and when much later Antony gave Cleopatra queen of Egypt a

well-forested area of Cilicia it was not intended as a hunting-park or a status symbol; it was to provide timber for an Egyptian fleet.

The Roman fleet was overshadowed by the legions, but in the first war against Carthage (264-241 B.C.) the Romans soon realised that the Carthaginians could not be driven from Sicily so long as they could be reinforced with men and materials from Africa. History might have run a very different course if Italy had not been well forested. During the imperial period even less is heard of Roman fleets; but the effective organisation of permanent fleets round the Mediterranean by Augustus made a significant contribution to the peace and prosperity of the early Empire. The firm suppression of piracy was the essential foundation for a free flow of trade between east and west.

### **The primacy of Fir**

That fir was normally the shipwright's first choice is confirmed from widely varying sources. Plato, in outlining the character of his ideal city, is anxious that there should be 'no good fir nor mountain pine, not much cypress, and little coastal pine which shipwrights have to use for the interior parts of merchant vessels, because this would encourage trade, the great corrupter'. Alexander, on the Hydaspes, needing a fleet to carry his army down to the Indus, is glad to find a plentiful supply of fir, pine, and cedar. In Virgil fir (*abies*) is accepted as a normal name for a trireme. Theophrastus is also right in drawing a distinction between warships, the commonest type of which in his day was the trireme, and merchantmen. Merchantmen had to stay at sea for long periods and strength was more important than speed. The effectiveness of triremes depended on speed and so they were lightly built, tended to hug the coast, and, whenever they could, the crews landed for the night. The primacy of fir is most decisively illustrated in the text of an alliance between Amyntas King of Macedon and the Chalcidians in the early fourth century H.C.: 'The Chalcidians may export pitch, all building-timbers, and all ship-timbers except firs unless their government requires them. The Chalcidian government may take out firs, provided that they report first to Amyntas and pay the prescribed dues.'

The fir is a mountain tree, normally growing at or near the highest timber level, and rarely found below 800 metres. Quality depends largely on climate, temperature, and soil, and of the four varieties in the Mediterranean area *Abies alba*, the silver fir, which was limited to Italy and Sicily, and Macedon, had the highest reputation. The pine grows at lower altitudes, is more widespread and diversified, but can be roughly divided into coastal and mountain pines. It was the mountain pine *Pinus laricio* in Italy and the west, and *Pinus nigra* in Greece and the eastern Mediterranean, that produced the stronger and bigger timbers and was most appreciated by shipbuilders. The main advantage of fir over pine was that it was lighter and, when grown in high forest conditions where the trees are closer together and compete for the light, produced longer lengths of straight timber. In such conditions the fir also sheds its lower branches earlier than the pine and is therefore more free from knots. This virtue in the fir made it particularly valuable for oars, whose strength was vital to the trireme.

## Wooden walls

Britain's wooden walls were largely, but by no means exclusively, built of oak and the quality of her warships was in some measure due to the strength of the oaks that matured slowly on the heavy soils of Kent, Sussex, and Hampshire. When the crisis of the Napoleonic Wars revealed acutely the increasing dependence of the navy on foreign supplies there was a brisk planting of acorns in the New Forest and in the Forest of Dean. In the ancient story oak has a much less massive role. It was used for their ships by the Veneti, a Gallic tribe living in Brittany, but strength in the Atlantic was more important than speed. In naval warfare in the Mediterranean speed was the first essential. Speed requires lightness and oak is heavy.

There is ample evidence in Greek and Roman writers about shipbuilding timbers and there are no serious inconsistencies in the sources. The fullest and best statement comes from Theophrastus:

'Fir (*elate*), mountain pine (*peuke*), and cedar (*kedros*) are the standard ship-timbers. Triremes and long ships (warships) are made of fir because it is light, while round ships (merchantmen) are made of pine because it does not decay. Some people, however, make their triremes of pine also, because they have no adequate supply of fir, while in Syria and Phoenicia they use cedar, because they are short of pine as well as fir. In Cyprus they use coastal pine (*pitys*) which grows in the island and seems to be of better quality than mountain pine (*peuke*). These woods are used for the main timbers, but for the trireme's keel oak is used because it has to stand up to the hauling . . . They make the cutwater and catheads, which require special strength, of ash, mulberry, or elm.'

## Strong oars

This special importance of the oar is reflected in literary sources and inscriptions where oars are mentioned separately from general ship-timber. When Perdiccas King of Macedon made an alliance with Athens he undertook not to export Macedonian oars to anyone but the Athenians. The best wood for oars came from young trees for they were more flexible, and special care had to be taken in the shaping of the oar, as Theophrastus explains: 'The fir has many layers, like the onion (a picturesque way of describing annual growth-rings), for there is always a layer below the one that is visible; and that is why when they shave the wood to make oars they try to remove the layers one by one evenly. If they do this, the oar is strong; if they do not strip off the layers evenly the oar is weak.' The regular listing of *kopai adokimoi*, oars unfit for use, often because they were worm-eaten, in Athenian naval inventories of the fourth century B.C. shows how important it was to ensure that the trireme was not handicapped by weak oars which might snap at a critical moment. But for the main timbers good pine was better than poor fir and if Aristophanes introduces two triremes of pine in his *Knights* Athens is unlikely to have had an all-fir fleet in the fifth century.

Theophrastus does not include cypress among his ship-timbers, but where there were ample supplies it was more than adequate. When Alexander shortly before his death was

contemplating an expedition against Arabia, he relied mainly on the shipbuilders of Cilicia, Cyprus, and Phoenicia, but he also used cypresses that had become acclimatised in Babylon. Vegetius, writing in the late Roman Empire about military and naval organisation, included cypress with pine and fir as the best ship-timbers, and it was used in the sixth century for the fleet of Theodoric . . . But with Theodoric we are already moving towards the Middle Ages.

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